

Broncholithiasis mimicking lung cancer

Akciğer kanserini taklit eden bronkolitiazis

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ABSTRACT

A 64-year-old female patient was admitted to our outpatient clinic with pleuritic chest pain, non-productive cough, and dyspnea. She expectorated three stones (lithoptysis) before bronchoscopy. She underwent positron emission tomography-computed tomography, which revealed a hyper metabolic mass in the right upper lobe of her lung. Three months later, the mass formation appeared as a patchy consolidation in the first control thoracic computed tomography examination. In conclusion, postobstructive consolidation due to broncholithiasis, which is very rare, should be kept in mind in the differential diagnosis of hyper metabolic mass. The simplest incidental diagnostic finding of broncholithiasis is the rare lithoptysis.

Keywords: Broncholithiasis, lithoptysis, mass-like consolidation.

Broncholithiasis is defined as a condition in which calcified or ossified material is present within the bronchial lumen. The most common form of a broncholith is erosion by and extrusion of calcified peribronchial lymph nodes. Other causes of broncholithiasis include aspiration of a radiopaque fragment or *in situ* calcification of foreign material and erosion by and extrusion of calcified bronchial cartilage plates. Diseases that mimic broncholithiasis include primary endobronchial infections such as actinomycosis, tracheobronchial diseases with mural calcification, hypertrophied bronchial artery with intramural protrusion and calcified endobronchial tumors including carcinoid tumors and hamartomas.^[1]

Depending on the location of the broncholith and the extent of bronchial erosion, clinical manifestations

ÖZ

Altmış dört yaşında kadın hasta plöritik göğüs ağrısı, kuru öksürük ve nefes darlığı ile polikliniğimize başvurdu. Bronkoskopi öncesinde üç adet taş ekspektore edildi (litoptizis). Pozitron emisyon tomografi-bilgisayarlı tomografide sağ akciğer üst lobda hipermetabolik kitle izlendi. Kitle, üç ay sonraki ilk kontrol göğüs bilgisayarlı tomografisinde yamalı konsolidasyon görünümü kazandı. Sonuç olarak, hipermetabolik kitle ayırıcı tanısında çok nadir görülen bronkolitiazise bağlı postobstrüktif konsolidasyon akılda tutulmalıdır. Bronkolitiazisin en basit rastlantısal tanısal bulgusu nadir görülen litoptizisdir.

Anahtar sözcükler: Bronkolitiazis, litoptizis, kitle benzeri konsolidasyon.

range from asymptomatic, mild coughing and sputum to hemoptysis, chest pain, fever, secondary pneumopathy, bronchiectasis and atelectasis. Occasionally, broncholytic expectoration can be seen, which is known as lithoptysis.^[2]

Herein, we report a case diagnosed with lithoptysis mimicking lung cancer.

CASE REPORT

A 64-year-old female patient was admitted to our outpatient clinic with pleuritic chest pain, non-productive cough, and dyspnea. She was a non-smoker, but she had a biomass exposure, as she was working in the tandoori kitchen for about 30 years. Bilateral rhonchi were auscultated. High C-reactive

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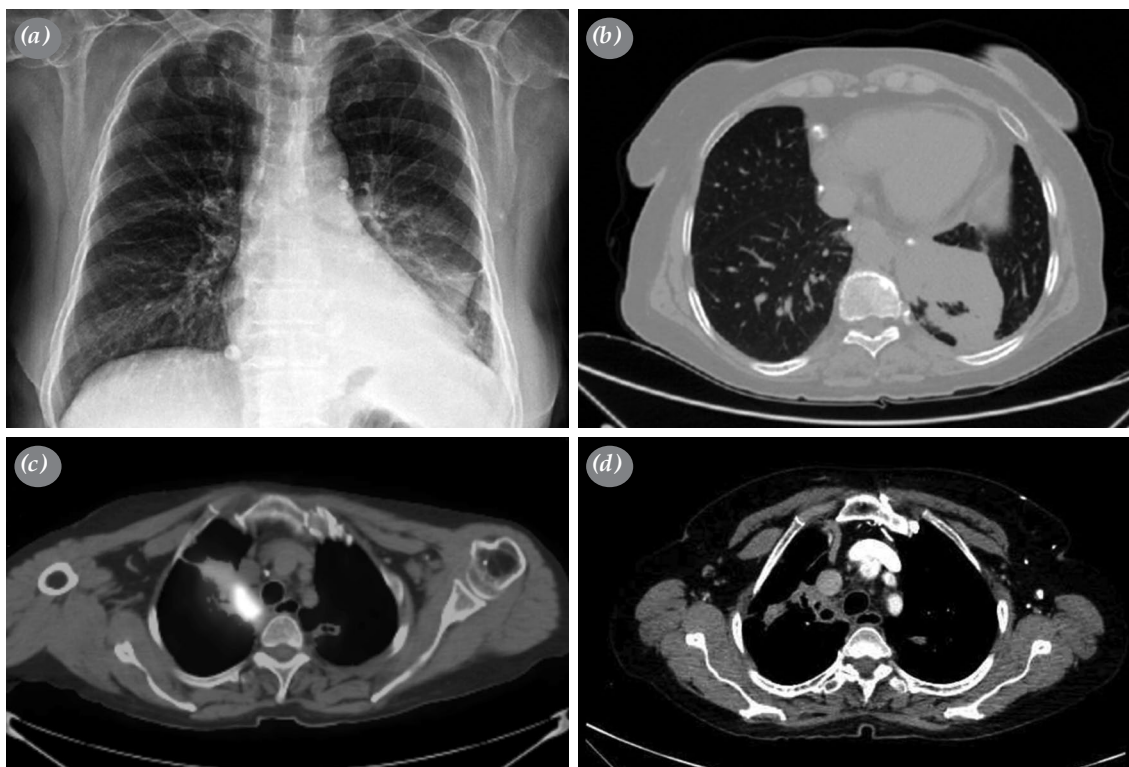


Figure 1. (a) Homogeneous density starting from the paracardiac area and extending to the periphery was observed in the lower left zone on admission chest X-ray. (b) A large mass-like consolidation in the left lung lower lobe associated with lobar collapse and calcific mediastinal lymphadenopathy on admission thoracic computed tomography. (c) A 2.5-cm, irregular soft tissue lesion (SUV_{max} : 20.5) on positron emission tomography-computed tomography. (d) The mass formation which was observed in the upper lobe of the right lung, gained the appearance of patchy consolidation areas in the first control thoracic computed tomography examination three months later.

protein, mild leukocytosis, and hypoalbuminemia were detected in the biochemistry laboratory.

On chest radiography, homogeneous density starting from the paracardiac area and extending to the periphery was observed in the lower left zone (Figure 1a). Antibiotherapy caused minimal improvement of the symptoms. As part of the procedure for the non-resolving cough, the patient underwent computed tomography (CT) of the chest, which revealed a large mass-like consolidation associated with lobar collapse (Figure 1b) in the left lung's lower lobe and calcified mediastinal lymphadenopathy.

Before bronchoscopy, she expectorated three yellow-black stones (Figure 2). Mucosal infiltration with white granulation on the left lateral wall of the trachea distal (Figure 3) and external press with white mucosal infiltration narrowing the left main bronchus entrance by 80% were observed by fiberoptic bronchoscopy evaluation (Figure 4). An anthracotic plaque was seen, when the infiltration was passed by. After the left main bronchus mucosal

infiltration biopsy, acute hemorrhage occurred. The biopsy was reported as a chronic non-specific bronchitis. Two months later, multiple calcific lymph nodes, diffuse bronchopneumonia foci in the upper



Figure 2. The expectorated stones (lithoptysis).

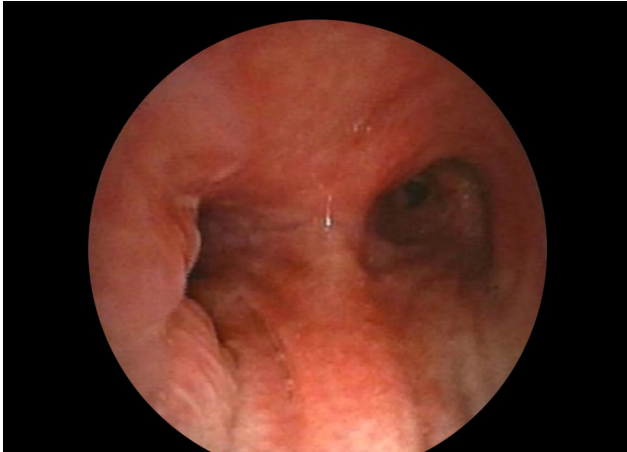


Figure 3. Mucosal infiltration with white granulation on the left lateral wall of the trachea distal observed by fiberoptic bronchoscope.



Figure 4. Extrinsic compression with white mucosal infiltration narrowing the left main bronchus entrance by 80% was observed by fiberoptic bronchoscopic evaluation.

lobe of the left lung, collapsed appearance in the left lower lobe of the lung, tubular bronchiectasis, and an extensive chronic consolidated area were detected on control thoracic CT.

She resorted to our chest outpatient clinic with a preliminary mass in the upper lobe of her right lung which was observed on the thoracic CT performed at an external center five months after the second consultation. The patient underwent positron emission tomography (PET)-CT which revealed a hypermetabolic and an irregular soft tissue lesion with a diameter of 2.5 cm (maximum standardized uptake value [SUV_{max}]: 20.5) (Figure 1c). Anthracosis was

observed with bronchoscopy in the segment mouths and no endobronchial lesion was detected. Lavage acido resistance bacillus staining, mycobacterial culture, and polymerase chain reaction tests of the upper lobe of the right lung were negative and lavage cytology was reported as non-specific inflammatory cells. Furthermore, transthoracic fine needle aspiration was performed and non-specific inflammatory cells were observed in biopsy.

The patient, who had consolidations in different localizations during thoracic CT follow-up in our unit in the last one year, was discussed at the Surgical Council. The Council decided that the lesion in the upper lobe of the right lung was post-obstructive consolidation and she was closely followed in the outpatient setting.

Three months later, the mass formation, which was observed in the upper lobe of the right lung, appeared as patchy consolidations in the first control thoracic CT examination (Figure 1d).

DISCUSSION

Endobronchial tumors with calcification (carcinoid tumors, hamartoma, chondroma, etc.) or tracheobronchial disease with mural calcification can mimic broncholithiasis.^[1] At the third admission of our case, the hypermetabolic mass in the PET-CT raised the suspicion of malignancy. However, no malignancy was detected in both bronchoscopic bronchial biopsy and transthoracic fine needle aspiration biopsy.

Endobronchial narrowing caused by granulation tissue (71.7%), whitish stone-like material (65.2%), extrinsic compression (13.0%), anthracosis (10.9%) and endobronchial bleeding (8.7%) are the bronchoscopic findings of broncholithiasis.^[2] Endobronchial narrowing caused by granulation tissue, extrinsic compression and anthracosis were observed in the bronchoscopic evaluation of this case.

Findings in X-rays are often non-specific (hilar calcification or parenchymal infiltrates depending on the etiology)^[3] and, therefore, thoracic CT is required to diagnose, localize, and detect the degree of airway obstruction.^[4] Thoracic CT characteristics are as follows, in order of frequency: Airway distortion, consolidation, bronchiectasis, mucoid impaction, bronchiolitis. Broncholithiasis is more common in the right lung (most common in the right middle lobe) than in the left.^[2] Within one year, mass-like consolidation, due to airway obstruction, was observed at several localizations in four separate thoracic CT scans of the case.

Management of symptomatic broncholiths is still debated. Review of the literature reveals that the outcome of bronchoscopic removal depends on the degree of broncholith attachment to the bronchial wall, broncholith location, and severity of symptoms.^[5] Most intraluminal broncholiths can be removed bronchoscopically.^[2] Spontaneous broncholith expectoration is rare but may sometimes lead to symptomatic^[2] and radiological improvement of consolidation. Surgical intervention is indicated in patients with persistent or massive hemoptysis, bronchiectasis, bronchial stenosis, or fistula.^[2,4] Mixed or extraluminal broncholiths usually require surgical resection.^[2,6] Before bronchoscopy to examine airway obstruction, our case had expectorated stones in front of the bronchoscopist unprecedentedly and, thus, no additional procedure was required for the diagnosis and treatment.

In conclusion, rare broncholitis should be considered in the differential diagnosis of mass-like consolidation and relocating transient consolidations on thoracic imaging. Bronchoscopy is an effective tool for both diagnosis and treatment management. Observation of lithoptysis confirms the diagnosis.

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